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ABSTRACT

The New Zealand Technical Correspondence Institute (NZTCI) is described. (The NZTCI is the largest teaching institution in New Zealand, with 34,000 part-time vocational students taking courses in 950 subjects. Its students constitute about one-third of all vocational students in New Zealand.) Among the components described are the students (80 percent male, all over 15 years old); courses (nearly all directed toward national qualifying examinations); teaching system (the printed assignment being the main instructional method); and the delivery system (the New Zealand Post Office). Also included are explanations of the arrangements made for students to do field and laboratory work; the training and duties of NZTCI teachers; the processing of student assignments; the encouragement of telephone contact as well as correspondence between teachers and students; the development process for new courses and instructional materials; and the assessment of courses, materials, and student performance. The document concludes with six strategies credited with producing a cost-effective and efficient institute: self-paced instruction; 200 hours of teacher training related to distance education; friendly communication between teachers and students and quick feedback on assignments; concise, clear written assignments; on-the-job training, lab courses, and block courses at other institutions; feedback from industry and commerce. (CML)

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Vocational teaching at a distance
The New Zealand perspective

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THE NEW ZEALAND TECHNICAL CORRESPONDENCE INSTITUTE

NZTCI is charged to provide vocational education for all students within New Zealand who for various reasons find distance education more appropriate to their needs or cannot attend a class-contact institution. Our main purpose is to train, retrain and educate people for service in industry and commerce.

NZTCI is the largest teaching institution in New Zealand. We employ 500 full-time staff (400 teachers and 100 administrative and production staff), and we teach 34,000 students in 950 subjects, including trades, engineering, agriculture, horticulture, accountancy, law, banking and management. Although we are only one of 21 technical institutes and community colleges, our students make up about one-third of all vocational students enrolled in New Zealand.

STUDENTS AND ENROLMENT

The annual enrolment is about 34,000 students. They can enrol at any time of the year. The criteria for enrolment are that students must be over 15 years of age and reside more than 16 km from any class-contact institute offering the course. In spite of this 16 km restriction, about half of our roll consists of urban students, but they must first get clearance from the Principal of the class-contact institute in their district.

In general, our students are already employed in an occupation related to their course of study. About one-quarter are apprentices studying trades, one-quarter taking technician courses, one-quarter studying for a professional qualification, and the rest studying for various qualifictions at sub-professional level.

All students are part-time. Nearly a quarter are aged over 30, many of whom are upgrading their present qualifications. Women comprise only 20% of the roll, but this proportion is steadily increasing. The great majority of our students are studying for national qualifications which are examined externally to TCI.

COURSES

NZTCI provides vocational courses only. Almost all courses are directed towards national qualifications issued by various statutory bodies such as the NZ Trades Certification Board, the Authority for Advanced Vocational Awards, the Society of Accountants, and the Law Society. The bodies set the prescriptions and the examinations on which the institute bases its courses. In addition, NZTCI teaches courses to a small number of non-examining bodies and issues an NZTCI certificate to successful students by accreditation (for example, Royal NZ Federation of Justices). Most NZTCI students are studying for the same national examinations as those in class-contact institutes.

THE TEACHING SYSTEM

The printed assignment is the main method of instruction. Each subject of each stage of a course is covered by some 8 to 14 printed assignments. Most assignments are fully independent, textbooks being required only for supplementary reading. The course materials are planned, written, edited, illustrated and printed to be clear and easy to follow. Each assignment of a course is structured to resemble a series of classroom lessons — each with learning objectives, fully illustrated content and discussion, summaries of main points, revision questions and answers, and ending with questions designed to draw out the content of the assignment.

Students' work is given careful attention and is promptly returned with tutorial guidance and a set of answers. The whole system is based on self-paced personal instruction. Students study up to five subjects at a time. They can start at any time of the year and study at their own pace, within generous limits. Most examination prescriptions do require them to complete 80% of the coursework before they can enter for the examination.

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THE DELIVERY SYSTEM

The NZ Post Office provides the delivery system through its comprehensive daily coverage of all districts. NZTCI materials are delivered by surface mail, normally taking 1–3 days to the most remote areas. Overseas students are serviced by airmail, paying the airmail costs. The institute pre-pays all surface mail both to and from students. Post Office charges to TCI amounted to $400,000 in 1986.

TEACHING THE PRACTICAL COMPONENT

The printed assignments are supported by other media. Students of many courses are required to attend laboratory or fieldwork courses or attend block courses in practical work each year in addition to their assignment work. As most of our students are employed in their field of study, much of their practical training is obtained by practical experience in an on-the-job situation. This practical skill gained in the course of their employment is supported in a variety of ways.

1. Trades students are directed to the nearest class-contact institute for a 3–6 week practical course in each of their 3 years of study. Having access to TCI course material, the local teachers can teach the practical work in a way that supports the TCI course material.
2. Technical and professional students, at appropriate stages of their course, are directed to the Central Institute of Technology to do their laboratory and fieldwork. The Central Institute of Technology is located in the Wellington area 10 km from TCI. It has the necessary residential halls and laboratory equipment to accommodate students. Some of these courses are run by TCI teachers and all students are visited by their TCI teachers while attending the practical course.
3. TCI holds some class-contact courses that do not require workshop or laboratory equipment on site at TCI.

Some students are required to complete practical aspects of their assignments in the workplace. Sometimes, larger companies collaborate with TCI to supplement its correspondence teaching. Correspondence work can be supported in the workplace in many ways, depending on the particular needs and circumstances of the employer's business.

TEACHER TRAINING

Almost all our teachers are recruited from industry or commerce. Few have had teaching experience and even fewer any teacher training. All newly appointed teachers are entitled to 6 weeks of teacher training. A training course for distance educators, developed at TCI, is administered by our Education Resource Unit. The course draws on the expertise of a number of experienced teachers within TCI. It is organised around self-instructional material, com-

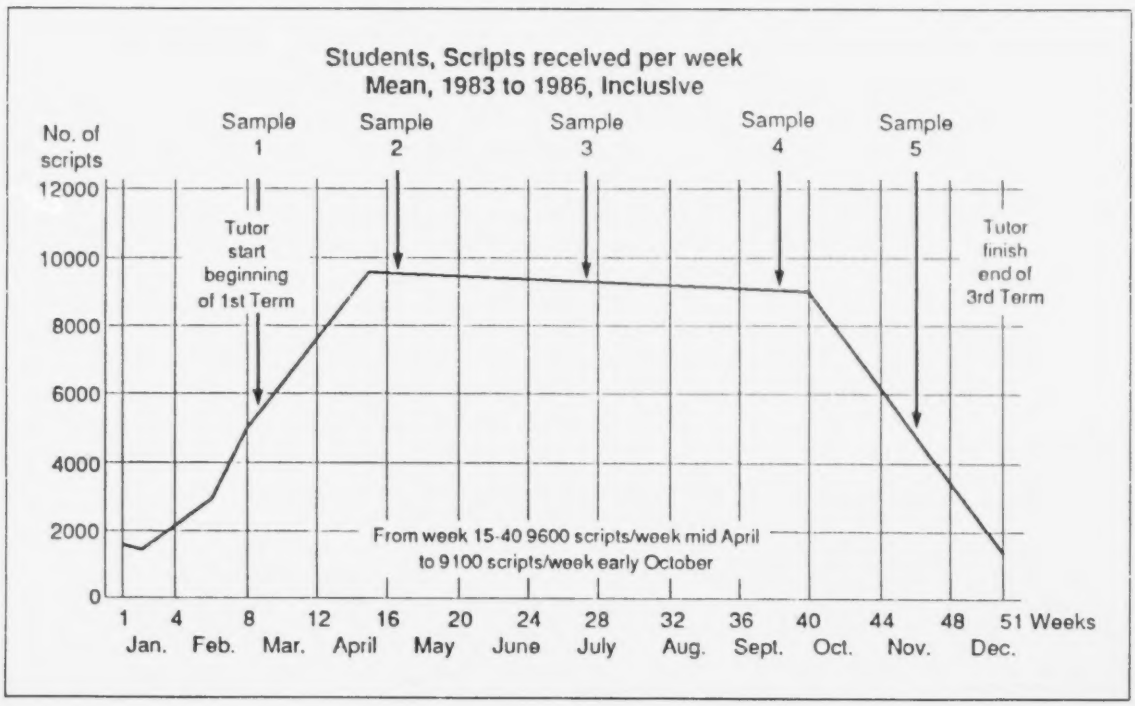
Students, Scripts received per week
Mean, 1983 to 1986, Inclusive
No. of scripts
Sample 1
Sample 2
Sample 3
Sample 4
Sample 5
12000
10000
8000
6000
4000
2000
0
Tutor start beginning of 1st Term
Tutor finish end of 3rd Term
From week 15-40 9600 scripts/week mid April to 9100 scripts/week early October
1 4 8 12 16 20 24 28 32 36 40 44 48 51 Weeks
Jan. Feb. Mar. April May June July Aug. Sept. Oct. Nov. Dec.

Figure 1.

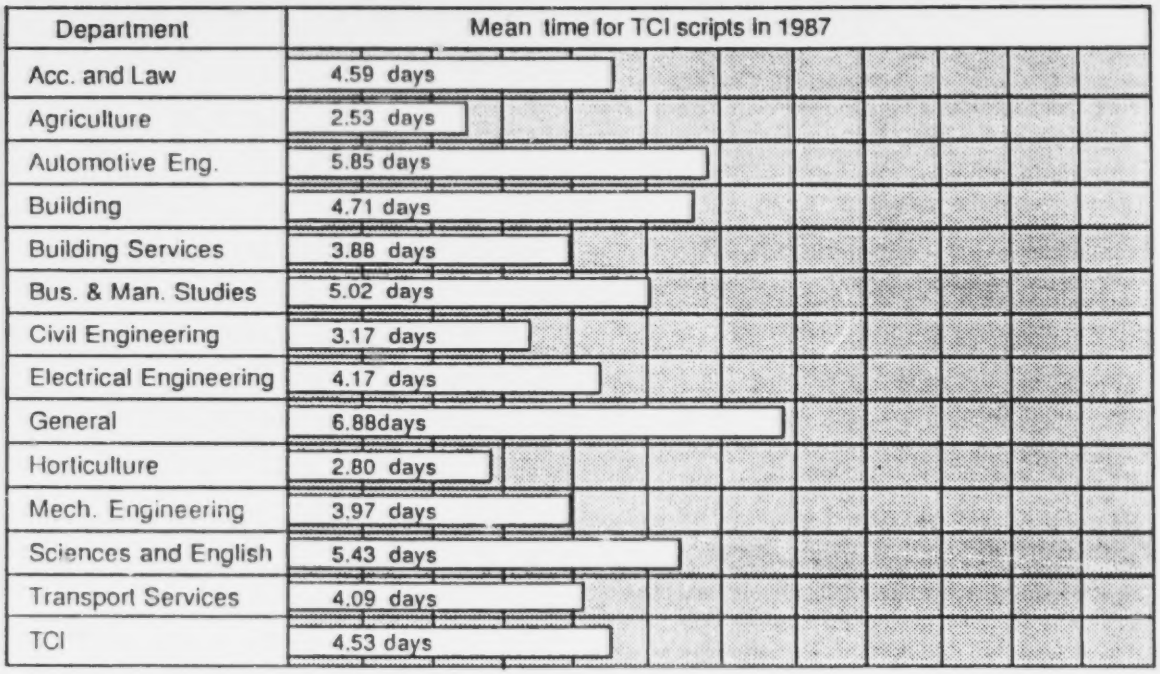

Figure 2. Turnaround time – working days.

bined with one-to-one support sessions and group workshop sessions. New teachers therefore study partly by the same medium with which they teach.

Our course is based on a series of topic-based modules. Each module, self-contained instruction on a distance education topic, takes some 30–50 hours of study time.

Each module is divided into 3–5 units of 8–12 hours' study. Each unit contains learning objectives, teaching material, and an assignment to be written and returned to the training staff.

With the modular design, we can use the modules both as the parts of the full course for new teachers and as single resource items for seminars, workshops or study groups with other teachers.

TEACHING DUTIES

Most NZTCI teachers need to be versatile. Over a period they will have marking duties, write new assignments, revise or amend existing assignments, and technically edit assignments written by colleagues. They may also construct an audio tape, teach at block courses or seminars, develop, and/or mark examination papers or represent the institute at meetings of trade or professional organisations. Many also serve on prescription committees for examining bodies. Each group of teachers is supervised by a course supervisor, who in turn is responsible to one of the 14 Heads of Department.

PROCESSING STUDENTS' WORK

Over 400,000 students' scripts are received each year. Figure 1 shows the weekly flowrate of scripts received through the year, and the five sample points for measuring turnaround time.

The graph shows that the minimum flowrate is about 1500 scripts/week during the Christmas period. Some teachers continue working through the Christmas period to keep the students in work. The flowrate builds to a maximum of 9600 scripts/week in April and runs at over 9000 scripts/week into October. These scripts are received in the mailroom, where they are opened and distributed to teachers.

Each script is given careful attention by the student's tutor. The script is marked, commented on, and an assessment of it is recorded. It is then passed to the assignment store, together with instructions on which assignment is to be sent to the student next.

The assignment store assembles a package of the marked script, the tutor's comments, sample an-

swers, a new assignment, and a coded envelope on which the student will enter his or her address. The package is dispatched in the envelope which the student sent with his or her last script. This procedure keeps clerical work to a minimum.

Turnaround time, that is, the total time that a script is in the institute from its arrival in the mailroom to its dispatch from the assignment store, is monitored regularly. The following table lists turnaround time for 1987.

Turnaround time was measured in working days from receipt at records to dispatch from the assignment store. The average turnaround time in 1987 for the year to September is 4.53 days. Department turnaround time ranged from 2.53 days to 6.88 days. The turnaround time for 1986 was 4.30 days.

STUDENT CONTACT

In addition to the normal correspondence between students and teachers, students are encouraged to use the telephone to contact their teachers, and many call at TCI for informal discussions with their teachers.

WRITING AND COURSE PRODUCTION

NZTCI, being a teaching institution, does not set the prescriptions for courses leading to national qualifications. The examining bodies set them. NZTCI can introduce new courses only with the approval of the Department of Education.

When a new prescription has been approved, a course supervisor in the subject usually appoints a writer and a technical editor to draw up a writing plan for the course. The Second Deputy Principal considers the writing plan and may require it to be further discussed or amended before approving it.

The Second Deputy Principal is responsible for allocating writing priorities among the 14 departments and establishing the institute's annual writing programme. At present, NZTCI writes about 850 new assignments a year and amends about 1600. Present stock stands at just over 9000 different assignments.

Whenever the writing plan for a new assignment is approved, the writer has to complete the assignment draft. The draft may be handwritten or done on a wordprocessor. At present about 75% of drafts are handwritten and 25% prepared on computers using many popular software packages. When completed, the author's draft is examined by the technical editor and is checked by the course supervisor. The writer then discusses illustration requirements with the art editor.

The assignment is then logged into the production system and passed on to a specialist group of presentation editors. A presentation editor checks and amends the assignment to make it concise, clear and readable and with good teaching structure. After a check by the writer and any needed discussion with the editor, the assignment is typeset and illustrated. We use Apple Macintosh computers with Pagemaker and Microsoft Word software. Both proof and final copies are produced on a laser printer.

The typeset proof is checked by a specialist group of proofreaders, again checked by the writer, and corrected.

When the illustrations have been mounted in the final copy, the writer makes a final check. The assignment is printed on the premises. The printed copies are kept in the assignment store for issue to students.

Reprints are normally scheduled on a 12 month cycle, but master copies are amended continuously (about 1600 per annum). Our large well-equipped printing plant is capable of printing one million pages a week.

EVALUATION AND ASSESSMENT

Although NZTCI is not an examining authority, many examining bodies do not set examinations at the lower stages of a course. We are thus required to assess students' work. The teacher assesses every script submitted by a student and, at the end of the subject or stage, makes final assessment based on the records of all assessments. The final assessment goes to the examining bodies either as a final result or as a coursework mark as part of a final examination. In general, final results are used for lower or intermediate stages of a course and coursework marks are combined with the marks gained at final external examinations.

The external examination results conducted by the various authorities, at whatever level of difficulty, almost always show that distance education students from TCI have an average pass rate higher than the average for New Zealand.

The courses and teaching material are constantly evaluated by the Principal and senior management in response to feedback from industry and commerce as well as from examining authorities. This attention is clearly reflected in the examination results of our students.

IN CONCLUSION

We do not pretend that we have all the answers, and we acknowledge that we are only beginning to use the new technologies. However, we have learned much in 40 years, mainly through trial and experiment, and have developed a system that is cost effective and efficient. The main strategies of our system are

1. *Self-paced personal instruction:* Our students can enrol at any time, study at a time and place that suits them, and work completely at their own pace.
2. *Teacher training:* Our teachers, who are recruited from industry or commerce, receive 200 hours of training in a course designed for distance educators.
3. *Communication with students:* Our teachers are encouraged to communicate with students in a warm, friendly, personal manner. The turnaround time of scripts is monitored regularly — at present it is 4.3 days.
4. *The written word:* We believe that the written word is the most effective teaching medium, and we have concentrated on making our written assignments concise, clear, and readable.
5. *The practical components:* We recognise that practical training is vital in vocational work. We use a variety of methods: on-the-job training, laboratory courses, and a network of block courses at institutes throughout New Zealand.
6. *Evaluation:* Most of our students sit national examinations that are externally controlled, and senior management are constantly responding to feedback from industry and commerce as well as students.